**Section 730.166 Logging, Sampling, and Testing Prior to New Well Operation**

a) During the drilling and construction of a new Class I hazardous waste injection well, the owner or operator must run appropriate logs and tests to determine or verify the depth, thickness, porosity, permeability, rock type, and the salinity of any entrained fluids in, all relevant geologic units to assure conformance with performance standards set forth in Section 730.165 and to establish accurate baseline data against which future measurements may be compared. A descriptive report interpreting results of such logs and tests must be prepared by a knowledgeable log analyst and submitted to the Agency. At a minimum, such logs and tests must include the following information:

1) Deviation checks during drilling on all holes constructed by drilling a pilot hole that is enlarged by reaming or another method. Such checks must be at sufficiently frequent intervals to determine the location of the borehole and to assure that vertical avenues for fluid movement in the form of diverging holes are not created during drilling; and

2) Such other logs and tests as may be needed after taking into account the availability of similar data in the area of the drilling site, the construction plan, and the need for additional information that may arise from time to time as the construction of the well progresses. At a minimum, the following logs must be required in the indicated situations:

A) Upon installation of the surface casing, the following information:

i) Resistivity, spontaneous potential, and caliber logs before the casing is installed; and

ii) A cement bond and variable density log, and a temperature log after the casing is set and cemented; and

B) Upon installation of the long string casing, the following information:

i) Resistivity, spontaneous potential, porosity, caliper, gamma ray, and fracture finder logs before the casing is installed; and

ii) A cement bond and variable density log, and a temperature log after the casing is set and cemented; and

C) The Agency must allow the use of an alternative to the above logs when an alternative will provide equivalent or better information; and

3) A mechanical integrity test consisting of the following:

A) A pressure test with liquid or gas;

B) A radioactive tracer survey;

C) A temperature or noise log;

D) A casing inspection log, if required by permit condition; and

E) Any other test required by permit condition.

b) Whole cores or sidewall cores of the confining and injection zones and formation fluid samples from the injection zone must be taken. The Agency may accept cores from nearby wells if the owner or operator can demonstrate that core retrieval is not possible and that such cores are representative of conditions at the well. The Agency may require the owner or operator to core other formations in the borehole.

c) The fluid temperature, pH, conductivity, pressure, and the static fluid level of the injection zone must be recorded.

d) At a minimum, the following information concerning the injection and confining zones must be determined or calculated for Class I hazardous waste injection wells:

1) The fracture pressure;

2) Other physical and chemical characteristics of the injection and confining zones; and

3) The physical and chemical characteristics of the formation fluids in the injection zone.

e) Upon completion, but prior to operation, the owner or operator must conduct the following tests to verify hydrogeologic characteristics of the injection zone:

1) A pump test; or

2) Injectivity tests.

f) The Agency must have the opportunity to witness all logging and testing required by this Subpart G. The owner or operator must submit a schedule of such activities to the Agency not less than 30 days prior to conducting the first test.

BOARD NOTE: Derived from 40 CFR 146.66 (2005).

(Source: Amended at 31 Ill. Reg. 1281, effective December 20, 2006)